SPECIFICATION

o On page 1, after the first paragraph (which begins "This application claims..."), insert the following heading:

FIELD OF THE INVENTION

o On page 1, amend the second paragraph as follows:

The invention relates to a method for the detection of a symbol from a received signal wherein the symbol is a selected symbol out of a predetermined set of symbols, wherein each symbol of the predetermined set is a complementary coded keying (CCK) symbol comprising a sequence of chips wherein each of the chips is phase shift keying (PSK)-modulated according to a selected modulation code wherein each of the selected modulation codes comprises a first sub-modulation code which is a selection from a plurality of first sets of predetermined phase modulating elements and a second sub-modulation code which is a selection from one second set of predetermined phase modulating elements wherein at least one of said predetermined phase modulating elements of said second set is a complex value such as defined in the high speed IEEE 802.11b standard, wherein a modulation code is selected from said modulation codes which correlates according to a correlation method with the received signal.

o On page 1, after the third paragraph (which begins "The invention also relates..."), insert the following heading:

BACKGROUND OF THE INVENTION

o On page 2, after line 27, insert the following heading:

SUMMARY OF THE INVENTION

o Amend paragraph beginning at page 2, line 28, as follows:

~~It is an object~~ Certain embodiments of the invention ~~to realise~~ realize a reduction of the number of correlators in the correlation- bank. ~~It is also an object~~ Certain embodiments of the invention [[to]] reduce the required processing power for the evaluation of said mathematical function. Furthermore ~~it is an object~~ certain embodiments of the invention [[to]] obtain an optimal detection performance. More in particular ~~it is an object~~ certain embodiments of the invention [[to]] offer a detection method which, despite the reduction in the number of correlators and the reduction in the required processing power of the mathematical function, yields the performance of a maximum likelihood detection method. Finally, certain embodiments of the invention ~~seeks~~ seek a method having the advantages stated above which can be used for receive-signals which comply with IEEE 802.11. For this, [[the]] an exemplary method according to the invention is characterised in that the method comprises at least the following steps:

[[o]] a. correlating the received signal with each of the possible first sub-modulation codes for obtaining first correlation results and selecting a correlation result;

[[o]] b. phase-modulating the selected first correlation result with one of said possible second sub-modulation codes for each possible second sub-modulation code for obtaining second correlation results;

[[o]] c. selecting the maximum second correlation result from the second correlation results;

[[o]] d. selecting the symbol of the received signal on the basis of a combination the first and second correlating results.

In the exemplary method according to the invention, two main parts of the correlation method can be distinguished. In the first part, the first correlation results are determined and, in the second part, the second correlation results are determined. The second correlation results are obtained by rotating one selected first correlation result to several positions in the complex plane. Since the second part ~~only~~ comprises processing of only one selected first correlation result, this yields a reduction in required processing power compared with a situation wherein each first correlation result has to be rotated in the complex plane.

o Amend paragraph beginning at page 3, line 23, as follows:

A further embodiment of the method according to the invention is characterised in that, in step a., for each first correlation result, the value of a function of the correlation result is determined and subsequently the first correlation result which provides the maximum value of the function is selected, wherein the function is determined by the type of modulation of the second sub-modulation code. Preferably the function is a function of the real and/or imaginary parts of the first correlation result. The evaluation of this function ~~requires~~ may require less processing power than conventional functions wherein the length of a complex correlation result is calculated, while still leading the optimal Maximum Likelihood Detection symbol.

o Amend paragraph beginning at page 4, line 22, as follows:

The apparatus according to one embodiment of the invention is characterised in that the apparatus comprises ~~the following means~~:

o On page 5, after line 9, insert the following heading:

BRIEF DESCRIPTION OF THE DRAWINGS

o On page 5, after line 17, insert the following heading:

DETAILED DESCRIPTION

o Amend paragraph beginning at page 6, line 5, as follows:

The symbol from the received signal 8 is a selected symbol out of a predetermined set of symbols wherein each symbol of the predetermined set is a Complementary Coded Keying symbol (short: CCK-symbol). A CCK-symbol comprises a sequence of chips wherein each of the chips is Phase Shift Keying modulated (short: PSK-modulated). The PSK-modulation is based on a selected modulation code wherein each of the selected modulation codes comprises a first sub-modulation code which is a selection ~~form~~ from a plurality of first sets of predetermined phase modulating elements and a second sub-modulation code which is a selection from one second set of predetermined phase modulating elements. At least one of said predetermined phase-modulating elements of the second sets is a complex value.

o Amend paragraph beginning at page 7, line 26, as follows:

The modulation code of the symbol (I) is divided [[in]] into a first sub-modulation code and a second modulation code. The first sub-modulation code s1 is defined in terms of the predetermined phase modulating elements of the first sets according to:

o Amend paragraph beginning at page 8, line 24, as follows:

Each of the correlators 24.m (m=1,2,...,M) performs a correlation of the received signal 8 with one of the possible first sub-modulation codes **c1 (IV)**. The number of correlators equals the number of first sub-modulation codes ($=C_1*C_2*...*C_{i-1}*C_1*C_{i+1}*...*C_n$). The correlation is performed as a matched filter, which means that the output signal of the correlator 24.m is given with the complex inner product:

$$Cor_m = \bar{\mathbf{s}}\mathbf{1}_m \cdot \mathbf{r}, \qquad \textbf{(VI)}$$

wherein Cor_m, is a complex scalar value, $\bar{\mathbf{s}}\mathbf{1}_m$ is the complex ~~conjugated~~ conjugation of the M-dimensional vector $\mathbf{s}\mathbf{1}_m$, where $\mathbf{s}\mathbf{1}_m$ is the mth first sub-modulation code of the first sub-modulation codes corresponding to the correlator 24.m, $\mathbf{r}$ is the M-dimensional receive signal 8 and $\{\}\cdot\{\}$ is the complex inner product between its arguments. Thus, each of the first correlators 24.m yields a first correlation result 6.m (m=1,2,...,M). These M first correlation results are passed to the control-unit 20. Next, the control-unit determines, for each first correlation result 6.m, the value of a function of the correlation result wherein the function is predetermined by the type of modulation of the second sub-modulation code. The type of modulation is defined with **(IIIB)** and **(V)**. The function is a function of the real and/or imaginary parts of the first correlation result for selecting the value of phase-modulating elements of the first sub-modulation code which are incorporated in the symbol of the received signal. The function firstly leads to the Maximum Likelihood detection symbol and secondly leads to a minimum of necessary processing time. For the chosen type of second sub-modulation (defined with **(IIIB)** and **(V)**), this optimal function *Crit*1 may be given with:

$$Crit1 = Max(|\mathrm{Re}(Cor_m)|,|\mathrm{Im}(Cor_m)|) \qquad \textbf{(VII)}$$

wherein the function *Max*() selects the maximum value of its input arguments, the function |()| yields the absolute value of its input argument, the function *Re*() gives the real part of its complex input argument and the function *Im*() gives the imaginary part of its complex argument. The control-unit 20 subsequently controls the switch 34 in the first selection means 10 on the basis of the maximum value of the function **(VII)** in such a way that the corresponding first correlation result 6.m is selected by the first selection means 10 and passed the second correlator-bank 12. Furthermore, the control unit selects the pre-determined phase modulating elements $e^{\hat{\varphi}_2}, e^{\hat{\varphi}_3}, e^{\hat{\varphi}_4}$ (which correspond to the selected phase parameters $\hat{\varphi}_2, \hat{\varphi}_3, \hat{\varphi}_4$ belonging to the first sub-modulation code which corresponds to the selected correlator) out of the set **(II)**. A signal 28, comprising this first sub-modulation code of correlator 6.m, is subsequently passed by the control unit 20 to the third selecting means 22.

o Amend paragraph beginning at page 9, line 31, as follows:

The second correlator-bank 12 receives the selected first modulation signal 14 and subsequently performs a phase-modulation on this signal based on the second sub-modulation coils **(V)**. Each of the second correlators [[16.k]] 26.k (k=1,...,K) performs a phase-modulation corresponding to one of the values of the second sub-modulation code c2 from **(III)** and **(V)**. The results of these phase-modulations are the second correlation results 16.k (k=1,...,K). In this example, K=4. The second correlation results are passed to the second selection means 18. The selection means [[22]] 18 selects the pre-determined phase-modulating element $e^{\hat{\varphi}_1}$ which corresponds to the second sub-modulation code of the correlator [[16.k]] 26.k for which the following function *Crit*2 is maximum:

o On page 13, after line 1, insert the following:

What is claimed is:

o Amend the Abstract beginning at page 17, line 3, as follows:

~~The invention relates to a method for the detection~~ Detection of a symbol from a received signal wherein the symbol is a selected symbol out of a predetermined set of symbols, wherein each symbol of the predetermined set is a complementary coded keying (CCK) symbol ~~comprising~~ having a sequence of chips wherein each of the chips is phase shift keying (PSK)-modulated according to a selected modulation code wherein each of the selected modulation codes ~~comprises~~ has a first sub-modulation code which is a selection from a plurality of first sets of predetermined phase modulating elements and a second sub-modulation code which is a selection from one second set of predetermined phase modulating elements wherein at least one of ~~said~~ the predetermined phase modulating elements of ~~said~~ the second set is a complex value such as defined in the high speed IEEE 802.11b standard, wherein a modulation code is selected from ~~said~~ the modulation codes which correlates according to a correlation method with the received signal.

~~The invention also relates to an apparatus for the detection of a symbol from a received signal wherein the symbol is a selected symbol out of a predetermined set of symbols, wherein each symbol of the predetermined set is a CCK symbol comprising a sequence of chips wherein each of the chips is PSK-modulated according to a selected modulation code wherein each of the selected modulation codes comprises a first sub-modulation code which is a selection form a plurality of first sets of predetermined phase modulating elements and a second sub-modulation code which is a selection from one second set of predetermined phase modulating elements wherein at least one of said predetermined phase modulating elements of the second set is a complex value such as defined in the high speed IEEE 802.11b standard, the apparatus comprising correlating means for correlating the received signal with said modulation codes according to a correlation method and means for selecting a modulation code from said modulation codes on the basis of the correlation.~~